Claims:

1. A method of data compression comprising applying a transform to multi-dimensional data to generate a multi-dimensional transform data set, and coding the transform data set by applying a one or more one-dimensional matching pursuits algorithms.

2. A method of data compression comprising:

   (a) applying a transform to multi-dimensional data to generate a multi-dimensional transform data set;
   (b) convolving the transform data set with each of a plurality of first one-dimensional basis functions to generate a corresponding plurality of convolved data sets;
   (c) determining a location in a first direction across all the convolved data sets, and a first basis function, representative of a greatest magnitude;
   (d) representing part of the transform data surrounding the said location with an atom derived from the first and second basis functions corresponding to the greatest determined magnitudes;
   (e) subtracting the atom from the transform data set to create a new data set;
   (f) repeatedly updating the convolved data sets by convolving any changed part of the transform data set with each of the plurality of first one-dimensional basis functions, and then re-applying steps (c) and (d); and

(g) outputting as transform data coded versions of the atoms derived at step (d).

3. A method of data compression as claimed in claim 2 in which the coded version of each atom includes magnitude, position in transform data set and number of basis function.

4. A method of data compression as claimed in any one of the preceding claims in which the data to be compressed represents video image data.

5. A method of data compression as claimed in any one of claims 1 to 3 in which the data to be compressed represents a still image.

6. A method of data compression as claimed in any one of claims 1 to 3 in which the data to be compressed comprises residual images within a motion compensated video coder.

7. A method of data compression as claimed in any one of claims 1 to 3 in which one dimension of the transform data set represents time.

8. A method of data compression as claimed in any one of claims 1 to 3 in which the transform is a frequency-separating transform.

9. A method of data compression as claimed in claim 8 in which the transform decorrelates at least part of the transform data set better in one direction than in a perpendicular direction, and in which a first algorithm is applied by carrying out a one-dimensional scan in the direction of greatest correlation.

10. A method of data compression as claimed in claim 1 in which the transform is two-dimensional.

11. A method of data compression as claimed in claim 1 in which the algorithms are applied by sequential one-dimensional scans through the data.

12. A method of data compression as claimed in claim 11 in which the scans successively switch between directions within the data.

13. A method of data compression as claimed in claim 11 in which successive scans continue in the same direction until an atom is located of lower magnitude than atoms which have previously been located in scans in other directions, and in which the scan direction is then changed.

14. A method of data compression as claimed in claim 13 in which the scan direction is changed to that direction in which an atom of highest current magnitude as previously been located.

15. A method as claimed in claim 2 including applying a function map to the convolved data sets before determining the location of greatest magnitude.

16. A method as claimed in claim 15 in which the function map represents a sensory model.

17. A method as claimed in claim 15 in which the function map represents a psychoacoustic model.

18. A method as claimed in claim 15 in which the function map represents a psychovisual model.

19. A method as claimed in any one of claims 15 to 18 in which the function map is multiplicatively applied.

20. A method as claimed in any one of claims 15 to 19 in which the function map is additively or subtractively applied.

21. A method as claimed in claim 2 in which the second one-dimensional basis functions extend in the spatial domain.

22. A method as claimed in claim 2 in which the second one-dimensional basis functions extend in the time domain.

23. A method as claimed in claim 2, including the additional steps of:

(a) convolving the transform data at the said location with each of a plurality of third one-dimensional basis functions; and

(b) determining a third basis function of a greatest magnitude;

and in which the atom is further derived from the third basis function corresponding to the greatest determined magnitude.

24. A method as claimed in claim 2, in which the second basis function representative of the greatest magnitude is determined without further searching in the region of the said location.

25. A method as claimed in claim 2, in which the second basis function representative of the greatest magnitude is determined at least partly by searching a local area in the region of the said location.

26. A method of data compression comprising:

(a) applying a transform to multi-dimensional data to generate a multi-dimensional transform data set;

(b) convolving the transform data set with each of a plurality of first one-dimensional basis functions to generate a corresponding plurality of convolved data sets;

(c) determining a first location in a first direction across all the convolved data sets, and a first basis function representative of a greatest magnitude; and representing part of the transform data surrounding the first location with a first atom derived from the first function corresponding to the greatest determined magnitude;

(d) subtracting the first atom from the transform data set to create a new data set;

(e) convolving the new data set with each of a plurality of second one-dimensional basis functions;

(f) determining a second location in a second direction across all the convolved data sets, and a second basis function representative of a greatest magnitude; and representing part of the new data set

surrounding a second location with a second atom derived from the second function corresponding to the greatest determined magnitude;

(g) subtracting the second atom from the new data set to create a further new data set;

(h) repeating step (b) with the further new data set, and then re-applying steps (c) to (f); and

(i) outputting as quantized transform data coded versions of the atoms derived at steps (c) and (f).

27. A method of data compression as claimed in claim 26 in which the first location and the second location are coincident.

28. A coder for data compression comprising means for applying a transform to time-varying data to generate a multi-dimensional transform data set, and a coder for coding the transform data set by applying a plurality of one-dimensional matching pursuits algorithms, one for each dimension.

29. A coder for data compression comprising:

(a) means for applying a transform to multi-dimensional data to generate a multi-dimensional transform data set;

(b) means for convolving the transform data set with each of a plurality of first one-dimensional basis functions to generate a corresponding plurality of convolved data sets;

(c) means for determining a location in a first direction across all the convolved data sets, and a first basis function representative of a greatest magnitude;

(d) means for representing part of the transform data surrounding the said location with an atom derived from the first function corresponding to the greatest determined magnitudes;

(g) means for subtracting the atom from the transform data set to create a new data set;

(h) means for repeatedly updating the convolved data sets by convolving any changed part of the transform data set with each of the plurality of first one-dimensional basis functions; and

(i) means for outputting as transform data coded versions of the derived atoms.

30. A coder for data compression as claimed in Claim 29 including:

(c1) means for convolving the transform data at the said location with each of a plurality of second one-dimensional basis functions; and

(c2) means for determining a second basis function representative of a greatest magnitude;

and in which the means for representing part of the transform data further operates upon the second basis functions.

31. A coder for data compression comprising:

(a) means for applying a transform to multi-dimensional data to generate a multi-dimensional transform data set;

(b) means for convolving the transform data set with each of a plurality of first one-dimensional basis functions to generate a corresponding plurality of convolved data sets;

(c) means for determining a first location in a first direction across all the convolved data sets, and a first basis function representative of a greatest magnitude; and representing part of the transform data surrounding the first location with a first atom derived from the first function corresponding to the greatest determined magnitude.

32. A coder for data compression comprising:

(a) means for applying a transform to multi-dimensional data to generate a multi-dimensional transform data set;

(b) means for convolving the transform data set with each of a plurality of first one-dimensional basis functions to generate a corresponding plurality of convolved data sets;

(c) means for determining a first location in a first direction across all the convolved data sets, and a first basis function representative of a greatest magnitude; and representing part of the transform data surrounding the first location with a first atom derived from the first function corresponding to the greatest determined magnitude;

(d) means for subtracting the first atom from the transform data set to create a new data set;

(e) means for convolving the new data set with each of a plurality of second one-dimensional basis functions;

(f) means for determining a second location in a second direction across all the convolved data sets, and a second basis function representative

of a greatest magnitude; and representing part of the new data set surrounding a second location with a second atom derived from the second function corresponding to the greatest determined magnitude;

(g) means for subtracting the second atom from the new data set to create a further new data set;

(h) means for repeating step (b) with the further new data set, and then re-applying steps (c) to (f); and

(i) means for outputting as transform data coded versions of the atoms derived at steps (c) and (f).

33. A codec including a coder as claimed in any one of claims 28 to 32.

34. A computer program for carrying out a method as claimed in any one of claims 1 to 27.

35. A machine-readable data carrier carrying a computer program as claimed in claim 34.

36. A method as claimed in Claim 2 including the further steps of:

(c1) convolving the transform data at the said location with each of a plurality of second one-dimensional basis functions;

(c2) determining a second basis function representative of a greatest magnitude;

and including, at step (d), representing part of the transform data surrounding the said location with an atom derived both from the first and

from the second basis functions corresponding to the greatest determined magnitudes.

37. A method of data compression as claimed in claim 11 in which the sequential one-dimensional scans through the data are orthogonal.